Claims

[c1]   This invention claims an architecture extension to an existing PABX or EPABX architecture such that it will provide broadband services to the end user of such a PABX or EPABX.

[c2]   It is claimed that there can be several logical manifestations of the architecture [c1] that is being patented in this application. These manifestations will result in providing broadband services to the end users of PABX or EPABX. As such all such manifestations are covered by this patent.

[c3]   The architecture [c1] , the concept and the technology being patented here can also be implemented via several physical manifestations that can result in providing broadband services to the end users of PABX or EPABX. This patent covers al such manifestations.

[c4]   The architecture extension to the existing PABX or EPABX can be physically located within the PABX or may be remotely located from the PABX and connected via some physical link that provides for transmission of broadband data and control signals from the extension to the PABX.

[c5]   It is claimed that there can be several implementations of such an extension [c4] . However, all these implementations will result in provision of broadband end user connections that allow these users to transmit broadband data, images and video to other users connected to the PABX or other users connected to the telecommunication or data communication network.

[c6]   It is claimed that the architecture [c1][c4] will provide broadband connectivity via Internet Protocol (IP) or some form of Digital Subscriber Loop (DSL) technology. The intent of the patent is not to patent the IP or any form of DSL technology since these technologies have been in the public domain for several

years. The intent is to patent the architecture of a system that uses these technologies to provide broadband services to the end users.

[c7]   It is claimed that the above described architecture [c1][c4] can be implemented via several (from 1 to N, where N can be a fairly large number) IP or some form of DSL interfaces.

[c8]   The extension [c4] will generally be provided by some remote or external box or system that will house such IP or some form of DSL interfaces.

[c9]   It is claimed that there can be some implementations wherein these IP or some form of DSL interfaces are located within the main PABX or EPABX [c4] .

[c10]   It is claimed that there are several forms of xDSL interface implementations such as ADSL, VDSL, SDSL, etc. and all variations are covered in this claim by using the terminology xDSL. Similarly there can be several types of IP interfaces (generally identified via speed or bandwidth of these interfaces). All such variations are covered by this claim.

[c11]   It is claimed that the connectivity from the extension system to the main PABX or EPABX can be achieved via several methods using some form of a communication link. Although such means have been used in the past in the context of Central Office switches or other applications of PABX (e.g. US Patent 5,805,692 cited above), none have been invented to provide broadband services as described in this patent. Each of these methods is covered by this claim.

[c12]   When the IP or any from of DSL interfaces are located within the PABX, the data and control signal transmissions from the end user apparatus to other end user apparatus or other users in the network is achieved via internal (back-plane bus) high speed connectivity. This is a requirement of an integrated

solution described in [c4]

[c13]   It is claimed that there are several manifestations or implementations of the connectivity of the implementations described in [c12] . These generally are various physical implementations that provide different bandwidth and or control signal speeds. This claim covers all such manifestations.

[c14]   It is claimed that the connectivity [c11] from the extension box or system that houses IP or some form of DSL end user connectivity can be via a well known telecommunications or data communications link technology such as DS1, DS3, Optical Interface (such as OC3, OC12, OC48), Asynchronous Transmission Mode (ATM), some form of IP (10 mbps, 100 mbps or 1000 mbps or 1gbps) interface. Again, it is not the intention of this patent to claim any uniqueness or invention as it pertains to these technologies. The intent is to patent the architecture of the system that uses these well known technologies to provide hitherto unknown services to the end users of PABXs.

[c15]   It is claimed that several manifestations of the extension box [c1] can exist. Some of these boxes may so called "smart" or "intelligent" boxes that contain call processing, signaling or some from of control function or intelligence capability. This intelligence may be provided via software or any other means such as use of Digital Signal Processor (DSP). Some implementations of this box can be "simple or dumb" and provide minimal control functionality. This patent claims uniqueness in the concept and the architecture for providing broadband services via these extensions rather than the technology that may or may not be used in these boxes or may be integrated within the PABX or EPABX.

[c16]   The claim also extends to the instance [c4] where the means to provide the broadband service to the end user via an IP or some from of DSL technology

interface is housed or located (IE integrated) within a PABX or EPABX. Most of this architectural uniqueness is further described in the drawings and accompanying text.

[c17]   The information transfer between end users as well as the extension box or node and the PABX or in integrated PABX solution can take place via a Switched Virtual Circuit connection (SVC) or a Permanent Virtual Circuit connection (PVC).

[c18]   The information transfer between end users as well as the extension box or node and the PABX takes place via some form of Packet Switch mode within the realm of the connections [c17] described above. In this mode, large amounts of information are transferred between end users via packets.

[c19]   When end user connections are voice based rather than data or image or video transfer based, the implementation provides for appropriate conversion of the packet data to digital voice (Pulse Code Modulation – PCM) or analog signals that are required to allow voice based communication.

[c20]   The implementation provides for appropriate conversion of packet data into image or video signals when such conversions are required.